S
622.33
M26scfr
1987
Robert Peccia &
Associates
Final report for
the Sage Creek
Coal Basin, Phase
II Abandoned Mine
Reclamation

FINAL REPORT

FOR THE

SAGE CREEK COAL BASIN, PHASE II ABANDONED MINE RECLAMATION PROJECT

MONT A/E 86-46-135

STATE DOCUMENTS COLLECTION

NOV 1 0 1992

MONTANA STATE LIBRARY
1515 E. 6th AVE.
HELENA, MONTANA 59620

PLEASE RETURN

Robert Peccia & Associates
RPA
P.O. Box 4518 810 Hialeah Court Helena, MT 59604 (406) 442-8160

MONTANA STATE LIBRARY
S 622.33 M26scfr 1987 c.1
Final report for the Sage Creek Coal Bas
3 0864 00077079 5

FINAL REPORT

FOR THE

SAGE CREEK COAL BASIN, PHASE II ABANDONED MINE RECLAMATION PROJECT

MONT A/E 86-46-135

DECEMBER, 1987

ROBERT PECCIA & ASSOCIATES
P.O. Box 4518 810 Hialeah Court Helena, MT 59604 (406)442-8160

Digitized by the Internet Archive
in 2014

https://archive.org/details/finalreportforsa1987robe

SAGE CREEK COAL BASIN, PHASE II
ABANDONED MINE RECLAMATION PROJECT

1. INTRODUCTION

The construction phase of Sage Creek Coal Basin A.M.R., Phase II began on August 31, 1987 in the area generally known as Lehigh #2 in Judith Basin County, Montana. Reclamation at all sites was satisfactorily completed on October 23, 1987. The work was performed by Montgomery Construction Company of Hilger, Montana under a contract with the Montana Department of State Lands, Abandoned Mine Reclamation Bureau MONT A/E 86-46-135.

The reclamation plan and construction specifications were developed by Robert Peccia & Associates from extensive site study and field work pursuant to the objectives established in Montana's Permanent Program Strip and Underground Mine Reclamation Rules and Regulations, specifically A.R.M. 26.4.1235(3). The primary criteria used for preparing the reclamation plans were the protection of human life, health and safety, the protection of the environment, the improvement of natural resources and the abatement of adverse impacts of past coal mining activities.

The contract documents provided specifications for each of the work items scheduled for bid. The contract stipulated that the Contractor would be responsible for performing all work in a manner conducive to fulfilling the project requirements. The quantities supplied in the plans and specifications were identified as approximate, to be used for informational purposes only and the Contractor was responsible for his own quantity takeoffs and determining the amount of work the intent of the contract entailed.

Robert Peccia & Associates provided the quality control inspection service for all of the work executed under MONT A/E 86-46-135.

Attachment #1 lists the bid items covered under the contract schedule, lists the approximate quantities, and shows other pertinent information necessary for the bidders on the project. The successful bid price of the project was $100,790.00. Final project costs including all additions was $111,097.23.

Reclamation of the abandoned coal mine sites included in the Sage Creek Coal Basin, Phase II project required the excavation, haul and disposal of approximately 40,000 cubic yards of coal spoils material; creation of a topsoil borrow area to generate approximately 6,800 cubic yards of topsoil; closure of 11 open mine adits and 4 open shafts; lime application at 25 tons/acre on 13.77 acres; fertilization and seeding of 22.1 acres; mulching 21.1 acres; application of 4,840 square yards of

erosion control blanket; construction of a 4" perforated PVC underdrain system; and construction of 8,525 lineal feet of Type F-4 barbed wire fence. A later addition to the work entailed the removal and disposal of the concrete pylon remains of the conveyor system that traversed the drainage bottom. The project involved three separate mines located at different areas of Judith Basin County.

II. DISCUSSION

Montgomery Construction of Hilger, Montana was the lowest bidder for the work outlined in the contract documents with a bid of $100,790.00. The Agreement for the project was dated July 22, 1987. The Notice to Proceed was dated August 3, 1987. The contract period was 60 consecutive calendar days.

The Contractor commenced work on August 31, 1987. All work was satisfactorily completed and tentatively approved on October 23, 1987.

The major equipment mobilized to the reclamation sites included:

1. Caterpillar D-8 (1)
2. Caterpillar D-7 (3)
3. P & H 418 track-mounted backhoe with 1¼ c.y. bucket
4. John Deere JD310 tractor/backhoe
5. Terex TS 18 scraper
6. Caterpillar 14 scraper
7. Caterpillar 922-B loader with 1½ c.y. bucket
8. Wishek 14' tandem disc
9. Ford F800 12 c.y. dump truck
10. Mechanics truck

Personnel employed on the project included one supervisor and four equipment operators.

The following briefly describes the work performed at each of the three work sites.

Hughes 'C' Site

The Hughes 'C' Site, characterized as a small "wagon mine" is located on the south-facing side of a ridge that parallels the North Fork of Sage Creek. Historically, the mine is identified as the "Rosenquist Mine." The work at this site included excavation and disposal of approximately 500 cubic yards of spoils material; creation of a topsoil borrow area; regrading of an eroded drainage; closure of one open shaft; disposal of mine related debris and wooden structures; reclamation of 1.57 acres; construction of 1,584 lineal feet of F-4 barbed wire fence, and installation of one 16-foot farm gate.

An additional shaft, not associated with the Hughes 'C' Site, was identified by landowner Jim Ridgeway. This shaft was steel lined; approximately 30' deep and apparently part of an earlier reclamation project. Six guy wire anchor posts were removed in the process of closing the shaft.

Coal Mine Coulee Site

Coal Mine Coulee is a perennial stream from the junction of three upstream tributaries downstream one mile to the county road and eventually draining into Running Wolf Creek. The mines associated with the Coal Mine Coulee Site occur along either side of the stream and, primarily, in the eastern headwater tributary. The work at this site involved nine individual coal mines and included the creation of a topsoil borrow/spoil disposal site below the eastern tributary; excavation and disposal of approximately 2,500 cubic yards of spoils material; closure of six open adits and one open mine shaft; reclamation of 1.53 acres; construction of a perforated PVC underdrain system to provide controlled flow of acid mine water drainage; construction of 1,688 lineal feet of Type F-4 barbed wire fence, and installation of two 16-foot farm gates.

The underdrain system was installed according to plans and specifications. A 40' section of 4" perforated pipe was installed to intercept the flow of acid mine water emerging from a seep below an open adit. During excavation, it was discovered that the seep was actually the termination of the old mine drain system consisting of a 3" tile pipe set within a 6" tile pipe. The pipes were partially plugged with a slimy material. A gravel chimney drain was constructed to direct the pipe flow to the 4" perforated underdrain. One hundred eighty feet of solid PVC pipe was installed to direct the mine water to the stream. The underdrain system was operational the day following installation. Initial flow rate was measured at approximately .2 - .4 gallons per minute.

Hughes 'F' Site

The Hughes 'F' Site is a series of mines and small prospects located on either side of a large coulee through which a perennial stream, Spring Branch, flows. The coal mines in this area were developed by the Cottonwood Coal Company, a subisidary of the Great Northern Railroad, as part of an expansion of their operations at Lehigh #1. Historically, Hughes 'F' is generally known as Lehigh #2.

The work at this site involved numerous adits, associated disturbances, and related mine structures. Reclamation activities included excavation, haul and disposal of approximately 37,000 cubic yards of spoils material; creation of a 250' x 700' topsoil borrow area; destruction and disposal of a dilapidated tipple and other structures; closure of five open adits and one open shaft; grading and contouring of the designated spoils deposition area; reclamation of 19.0 acres; installation of 4,840 square yards of erosion control blanket; removal of 1,400 lineal feet of old fence; and construction of 5,253 lineal feet of Type F-4 barbed wire fence and installation of three 16-foot farm gates.

During the development of the mines at Lehigh #2, the Cottonwood Coal Company constructed a large conveyor system that traversed the coulee from the two largest adits on either side of the coulee. A railroad spur line from Lehigh #1 was built and the conveyor system deposited the coal into the cars to be transported to the washer at Lehigh #1. The company also built about thirty houses for the miners. The remains of this activity includes massive concrete pylons from the conveyor system, and several concrete house foundations. The gravel ballast from the old railroad bed also exists delineating the location of the spur. The original reclamation plan did not include provisions for dealing with the formidable remains of this early expansion. Requests from landowner Gayle Evans, however, resulted in approval being granted to remove the pylons. A price to excavate, remove and dispose of the pylons was negotiated and work commenced on September 17, 1987. The cost of the additional work amounted to $4,400.00 and is included as Item #8 in Change Order #1.

The railroad spur, after passing through the conveyor pylons, branched out creating a railroad yard. The yard was situated in the same location as the proposed topsoil borrow area necessitating the removal of at least four 6-foot wide strips of ballast approximately 12" thick. These strips evidently marked the location of the four yard spurs. The Contractor agreed to excavate the ballast and remove it prior to developing the topsoil borrow area. The presence of the ballast plus an encroaching ground water level restricted the quantity of topsoil available for the reclamation purposes as planned. As a result, the Contractor was requested to increase the periphery of the borrow site

from the original size of 250' x 475' to a final reclaimed size of 250' x 700'.

Exploratory excavation for determining the topsoil borrow area limits and miscellaneous additional excavation required six hours of equipment use time. The JD 310 tractor-mounted backhoe was used for the additional work at a cost of $300.00. The cost is included as Item #9 in Change Order #1.

As requested by the Department of State Lands, the Contractor ordered additional seed for use on the Hughes 'F' Site to enhance its suitability as a wildlife habitat. The cost of the additional seed is included in Change Order #1, Item #12, Extra Seed - Snoberry, 18 lbs. PLS; and Item #13, Extra Seed - Woods Rose, 28 lbs. PLS. Total cost of the additional seed for Hughes 'F' Site is $1,421.98.

Additional seed was also purchased by the Contractor for the Department of State Lands in the following quantities; Upland Mix, 25 lbs. and Riparian Mix, 25 lbs. The cost of the extra seed delivered to State Lands was $503.25 and is included in Change Order #1, Items #10 and #11.

Fencing was subcontracted to Jim McDanel, a fencing contractor, of White Sulphur Springs, Montana. All fencing was completed on October 22, 1987.

All fertilizing and seeding on the Sage Creek Coal Basin, Phase II project was subcontracted to Don Jarvis, a rancher and custom seeder, of Lewistown, Montana. Fertilizer was applied with a broadcast spreader attached by a three-point hitch to the tractor. The spreader was calibrated to apply 184 lbs./acre. A Brillion Model SST-961 8' cultipacker-type seeder and a Ford 5000 series tractor were used to accomplish the seeding at the specified rate of 21.6 lbs./acre. The Brillion seeder was ideally suited to the extremely loose soil conditions existing after topsoil placement.

Straw mulch was applied to the sites with a Finn Equipment Co. Model MSW 23 mulch blower. The machine was modified by removing the thrasher chains to maintain the specified straw length. A homemade mulch tiller, specifically constructed for tucking straw mulch, was utilized on the project. The equipment and procedures used by the Contractor provided excellent mulching results. Total tonnage of straw used on the project was 40.68 tons, or 1.93 tons/acre.

Erosion control blanket was installed on the steep slopes northwest of the conveyor pylons. No blanket was required in the spoils deposition area.

III. CONCLUSION

The final contract price for work completed under MONT A/E 86-46-135 was $111,097.23 including additions of $6,625.23 revealed in Change Order #1. The final pay request is included as Attachment #2.

The Contractor, Montgomery Construction of Hilger, Montana, performed all tasks as outlined in the plans and specifications in a very workmanlike manner. The excellent supervision, skillful equipment operation and positive attitude maintained by the construction personnel greatly contributed to an outstanding project completion.

Attachment #3 is an analysis of construction costs for the project compared with the engineering costs.

ATTACHMENT #1

BID TABS

SAGE CREEK AMR PROJECT, PHASE II
MONT. A/E # 86-46-135
Bid Tabulations
06/03/87

Item No.	Description	Unit	Qty. Required	Engineer's Estimate RPA Unit Price	Bid Price	Montgomery Construction P.O. Box 755 Hilger, MT 59451 6290 A Unit Price	Bid Price	Swan & Sons Const. Route 1, Box 111 Anaconda, MT 59711 2732 A Unit Price	Bid Price	Donnes Construction 4002 McGirl Road Billings, MT 59105 5996 A Unit Price	Bid Price
	Contractor: Location: License #:										
1.	Debris Removal	LS	1.0	$7,000.00	$7,000.00	$2,500.00	$2,500.00	$5,000.00	$5,000.00	$5,000.00	$5,000.00
2.	Waste Disposal Pile	LS	1.0	$126,800.00	$126,800.00	$39,800.00	$39,800.00	$50,156.00	$50,156.00	$58,500.00	$58,500.00
3.	Close Mine Openings - Adit	EA	9.0	$525.00	$4,725.00	$600.00	$5,400.00	$450.00	$4,050.00	$300.00	$2,700.00
4.	Close Mine Openings - Shaft	EA	2.0	$900.00	$1,800.00	$1,000.00	$2,000.00	$500.00	$1,000.00	$500.00	$1,000.00
5.	Lime Application @ 20 tons/ac.	AC	15.0	$500.00	$7,500.00	$1,100.00	$16,500.00	$950.00	$14,250.00	$1,000.00	$15,000.00
6.	Fertilize and Seed	AC	22.0	$800.00	$17,600.00	$400.00	$8,800.00	$252.00	$5,544.00	$200.00	$4,400.00
7.	Mulch	AC	21.0	$400.00	$8,400.00	$200.00	$4,200.00	$625.00	$13,125.00	$400.00	$8,400.00
8.	Erosion Control Blanket	SY	4,840.0	$1.80	$8,712.00	$2.00	$9,680.00	$1.70	$8,228.00	$2.00	$9,680.00
9.	Remove and Reset Fence	LF	400.0	$1.00	$400.00	$2.00	$800.00	$0.98	$392.00	$1.00	$400.00
10.	Farm Fence (Type F-4)	LF	8,750.0	$1.50	$13,125.00	$1.00	$8,750.00	$0.98	$8,575.00	$1.00	$8,750.00
11.	Farm Fence Gate (16-ft.)	EA	6.0	$100.00	$600.00	$100.00	$600.00	$80.00	$480.00	$50.00	$300.00
12.	4" Perf. PVC Underdrain System	LF	40.0	$22.00	$880.00	$8.00	$320.00	$15.00	$600.00	$10.00	$400.00
13.	4" PVC Drainage Line	LF	180.0	$6.00	$1,080.00	$8.00	$1,440.00	$20.00	$3,600.00	$10.00	$1,800.00
	Total Bid (Actual):				$198,622.00		$100,790.00		$115,000.00		$116,330.00
	Total Bid (Contractor):						$100,790.00		$115,000.00		$116,330.00

Item No.	Description	Unit	Qty. Required	Williams Bros. Const. P.O. Box 129 Lewistown, MT 59457 5626 A Unit Price	Bid Price	RENCO P.O. Box 306 Belt, MT 59412 6538 A Unit Price	Bid Price	Luckinbill Const. P.O. Box 329 Columbus, MT 59019 6710 A Unit Price	Bid Price	Shumaker Const. P.O. Box 1442 Gt. Falls, MT 59403 5199 A Unit Price	Bid Price
	Contractor: Location: License #:										
1.	Debris Removal	LS	1.0	$2,000.00	$2,000.00	$4,000.00	$4,000.00	$7,000.00	$7,000.00	$2,800.00	$2,800.00
2.	Waste Disposal Pile	LS	1.0	$64,000.00	$64,000.00	$80,000.00	$80,000.00	$78,000.00	$78,000.00	$80,400.00	$80,400.00
3.	Close Mine Openings - Adit	EA	9.0	$200.00	$1,800.00	$250.00	$2,250.00	$375.00	$3,375.00	$500.00	$4,500.00
4.	Close Mine Openings - Shaft	EA	2.0	$200.00	$400.00	$300.00	$600.00	$375.00	$750.00	$500.00	$1,000.00
5.	Lime Application @ 20 tons/ac.	AC	15.0	$800.00	$12,000.00	$1,060.00	$15,900.00	$950.00	$14,250.00	$1,150.00	$17,250.00
6.	Fertilize and Seed	AC	22.0	$500.00	$11,000.00	$450.00	$9,900.00	$300.00	$6,600.00	$275.00	$6,050.00
7.	Mulch	AC	21.0	$800.00	$16,800.00	$400.00	$8,400.00	$565.00	$11,865.00	$375.00	$7,875.00
8.	Erosion Control Blanket	SY	4,840.0	$1.00	$4,840.00	$1.10	$5,324.00	$1.90	$9,196.00	$2.00	$9,680.00
9.	Remove and Reset Fence	LF	400.0	$0.85	$340.00	$2.00	$800.00	$1.25	$500.00	$1.00	$400.00
10.	Farm Fence (Type F-4)	LF	8,750.0	$0.85	$7,437.50	$1.00	$8,750.00	$0.92	$8,050.00	$0.90	$7,875.00
11.	Farm Fence Gate (16-ft.)	EA	6.0	$50.00	$300.00	$140.00	$840.00	$75.00	$450.00	$50.00	$300.00
12.	4" Perf. PVC Underdrain System	LF	40.0	$10.00	$400.00	$50.00	$2,000.00	$9.00	$360.00	$100.00	$4,000.00
13.	4" PVC Drainage Line	LF	180.0	$8.00	$1,440.00	$6.00	$1,080.00	$4.00	$720.00	$10.00	$1,800.00
	Total Bid (Actual):			*	$122,757.50		$139,844.00		$141,116.00		$143,930.00
	Total Bid (Contractor):				$123,097.50		$139,844.00		$141,116.00		$143,930.00

* Error in Contractor's bid. Correct amount shown.

			Contractor: Location: License #:	McDaniel & Sons P.O. Box 33 Nienart, MT 59465 5493 A		Barber Const. 6078 HWY 89 Belt, MT 59412 6570 A		Coleman Const., Inc. 479 Kentucky Dillon, Mt 59725 6231 A		Konitz Contracting P.O. Box 585 Lewistown, MT 59457 6023 A	
Item No.	Description	Unit	Qty. Required	Unit Price	Bid Price	Unit Price	Bid Price	Unit Price	Bid Price	Unit Price	Bid Price
1.	Debris Removal	LS	1.0	$17,413.00	$17,413.00	$9,500.00	$9,500.00	$2,500.00	$2,500.00	$7,500.00	$7,500.00
2.	Waste Disposal Pile	LS	1.0	$76,841.00	$76,841.00	$102,660.00	$102,660.00	$100,400.00	$100,400.00	$150,000.00	$150,000.00
3.	Close Mine Openings - Adit	EA	9.0	$1,500.00	$13,500.00	$250.00	$2,250.00	$3,000.00	$27,000.00	$1,600.00	$14,400.00
4.	Close Mine Openings - Shaft	EA	2.0	$2,550.00	$5,100.00	$250.00	$500.00	$4,000.00	$8,000.00	$2,000.00	$4,000.00
5.	Lime Application @ 20 tons/ac.	AC	15.0	$939.00	$14,085.00	$1,201.00	$18,015.00	$1,500.00	$22,500.00	$900.00	$13,500.00
6.	Fertilize and Seed	AC	22.0	$317.00	$6,974.00	$190.88	$4,199.36	$250.00	$5,500.00	$700.00	$15,400.00
7.	Mulch	AC	21.0	$205.50	$4,315.50	$196.42	$4,124.82	$525.00	$11,025.00	$500.00	$10,500.00
8.	Erosion Control Blanket	SY	4,840.0	$2.08	$10,067.20	$1.59	$7,695.60	$1.60	$7,744.00	$1.30	$6,292.00
9.	Remove and Reset Fence	LF	400.0	$1.07	$428.00	$1.00	$400.00	$3.00	$1,200.00	$3.00	$1,200.00
10.	Farm Fence (Type F-4)	LF	8,750.0	$0.89	$7,787.50	$0.97	$8,487.50	$0.85	$7,437.50	$2.25	$19,687.50
11.	Farm Fence Gate (16-ft.)	EA	6.0	$71.00	$426.00	$60.00	$360.00	$250.00	$1,500.00	$100.00	$600.00
12.	4" Perf. PVC Underdrain System	LF	40.0	$19.60	$784.00	$7.20	$288.00	$5.00	$200.00	$10.00	$400.00
13.	4" PVC Drainage Line	LF	180.0	$5.50	$990.00	$2.60	$468.00	$10.00	$1,800.00	$10.00	$1,800.00
Total Bid (Actual):					$158,711.20		$158,948.28	*	$196,806.50		$245,279.50
Total Bid (Contractor):					$158,711.20		$158,948.28		$196,786.50		$245,279.50

* Error in Contractor's bid. Correct amount shown.

Contractor:

Location:
License #:

Item No.	Description	Unit	Qty. Required
1.	Debris Removal	LS	1.0
2.	Waste Disposal Pile	LS	1.0
3.	Close Mine Openings - Adit	EA	9.0
4.	Close Mine Openings - Shaft	EA	2.0
5.	Lime Application @ 20 tons/ac.	AC	15.0
6.	Fertilize and Seed	AC	22.0
7.	Mulch	AC	21.0
8.	Erosion Control Blanket	SY	4,840.0
9.	Remove and Reset Fence	LF	400.0
10.	Farm Fence (Type F-4)	LF	8,750.0
11.	Farm Fence Gate (16-ft.)	EA	6.0
12.	4" Perf. PVC Underdrain System	LF	40.0
13.	4" PVC Drainage Line	LF	180.0
Total Bid (Actual):			
Total Bid (Contractor):			

ATTACHMENT #2

FINAL PAY REQUEST

PAYMENT REQUEST NO. 1

FROM: 08/31/87 TO: 10/30/87

PROJECT NAME: Sage Creek Coal Basin Reclamation Project - Phase II
LOCATION: Judith Basin County, MT
PROJECT NO.: Mont A/E 86-46-135

CONTRACTOR: Montgomery Construction
ADDRESS: P.O. Box 755
Hilger, MT 59451

SUMMARY OF PROJECT STATUS

Amount of Original Contract	$100,790.00
Amount of Approved Change Order(s)	$10,307.23
TOTAL CONTRACT AMOUNT	$111,097.23
Contract Time Used to Date (in days)	60
Percentage of Contract Time Used	100.0%
Percentage of Contract Amount Earned	100.0%

Total Contract Amount Completed	$111,097.23
Amount for Materials on Site	$0.00
TOTAL TO DATE	$111,097.23
x 90% = Total Amount Earned to Date	N/A
Less Previous Amount Earned	$0.00
Amount Payable This Period	$111,097.23
Less 1% Gross Receipts Tax	$1,110.97
TOTAL DUE CONTRACTOR THIS PERIOD	$109,986.26

REQUESTED BY: MONTGOMERY CONSTRUCTION

By: Jack Montgomery Date: [illegible]
Contractor

CHECKED BY: ROBERT PECCIA & ASSOCIATES, INC.

By: Date: 11/10/87
Engineer

APPROVED BY: DEPARTMENT OF STATE LANDS
ABANDONED MINE RECLAMATION BUREAU

By: Susan McAnally Date: 11/20/87
Owner

PAYMENT REQUEST NO. 1

PROJECT NAME: Sage Creek Coal Basin Reclamation Project - Phase II PROJECT NO: Mont A/E 86-46-135

ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT BID PRICE	UNITS OF WORK COMPLETED THIS REQUEST	UNITS OF WORK COMPLETED TO DATE	TOTAL COST OF COMPLETED WORK	% OF ESTIMATED QUANTITY COMPLETE
1.	Debris Removal	1.00 LS	$2,500.00	1.00	1.00	$2,500.00	100.0%
2.	Waste Pile Disposal	1.00 LS	$39,800.00	1.00	1.00	$39,800.00	100.0%
3.	Close Mine Openings - Adit (Quantity Adj. by C.O. #1, Item 1)	11.00 EA	$600.00	11.00	11.00	$6,600.00	100.0%
4.	Close Mine Openings-Shaft (Quantity Adj. by C.O. #1, Item 2)	4.00 EA	$1,000.00	4.00	4.00	$4,000.00	100.0%
5.	Lime Application @ 20 Tons/Acre (Quantity Adj. by C.O. #1, Item 3)	13.77 AC	$1,100.00	2.00	13.77	$15,147.00	100.0%
6.	Fertilize and Seed (Quantity Adj. by C.O. #1, Item 4)	22.10 AC	$400.00	22.10	22.10	$8,840.00	100.0%
7.	Mulch (Quantity Adj. by C.O. #1, Item 5)	21.10 AC	$200.00	21.10	21.10	$4,220.00	100.0%
8.	Erosion Control Blanket	4,840.00 SY	$2.00	4,840.00	4,840.00	$9,680.00	100.0%
9.	Remove and Reset Fence (Quantity Adj. by C.O. #1, Item 6)	1,400.00 LF	$2.00	1,400.00	1,400.00	$2,800.00	100.0%
10.	Farm Fence (Type F-4) (Quantity Adj. by C.O.#1, Item 7)	8,525.00 LF	$1.00	8,525.00	8,525.00	$8,525.00	100.0%
11.	Farm Fence Gate (16-Ft.)	6.00 EA	$100.00	6.00	6.00	$600.00	100.0%
12.	4" Perf. PVC Underdrain System	40.00 LF	$8.00	40.00	40.00	$320.00	100.0%
13.	4" PVC Drainage Line	180.00 LF	$8.00	180.00	180.00	$1,440.00	100.0%
	SUBTOTAL					$104,472.00	100.0%
	Change Order Items Not Included Above:						
	Change Order No. 1, Item 8				4,400.00		
	Change Order No. 1, Item 9				300.00		
	Change Order No. 1, Item 10				190.75		
	Change Order No. 1, Item 11				312.50		
	Change Order No. 1, Item 12				905.94		
	Change Order No. 1, Item 13				516.04		
	Subtotal Additional Change Order Items					$6,625.23	
	TOTAL					$111,097.23	

ATTACHMENT #3

ANALYSIS OF CONSTRUCTION AND ENGINEERING COSTS

ANALYSIS OF CONSULTANT COSTS INCURRED
FOR THE MONTANA DEPARTMENT OF STATE LANDS
ABANDONED MINE RECLAMATION BUREAU
AMR PROJECT NUMBER: MONTANA A/E 86-46-135
SAGE CREEK COAL BASIN AMR PROJECT
RPA PROJECT NUMBERS: 86-03.8, 86-03.11, 87-30.6 AND 87-30.7
DATE OF PREPARATION: DECEMBER 21, 1987

ENGINEERING SERVICE	AMOUNT
DESIGN ENGINEERING:	
1986 CONTRACT---SAGE CREEK AMR	$486.72
1986 CONTRACT---HUGHES AMR (A,B,C & F)	$2,540.40
1987 CONTRACT	$15,553.18
SUBTOTAL DESIGN ENGINEERING COST:	$18,580.30
CONSTRUCTION ENGINEERING AND PROJECT ADMINISTRATION COST:	
1986 CONTRACT	$0.00
1987 CONTRACT	$10,771.67
SUBTOTAL CONSTRUCTION ENGINEERING COST:	$10,771.67
PROJECT ENGINEERING COST:	$29,351.97
CONSTRUCTION COST:	$111,097.23

****

TO CALCULATE PERCENTAGE ENGINEERING FEES TO CONSTRUCTION COST:

DESIGN ENGINEERING/CONSTRUCTION COST	16.7244%
CONSTRUCTION ENGINEERING/CONSTRUCTION COST	9.6957%
TOTAL ENGINEERING COST/CONSTRUCTION COST	26.4201%

****

EDIT DATE: DECEMBER 21, 1987-------JHP